PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 April 2001 (04.04.01)	
International application No. PCT/US00/14696	**Applicant's or agent's file reference** 2923-WO
International filing date (day/month/year) 26 May 2000 (26.05.00)	**Priority date** (day/month/year) 28 May 1999 (28.05.99)
Applicant BIRD, Timothy, A. et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

20 December 2000 (20.12.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer R. Forax
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/331 (July 1992)

US0014696

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :Please See Extra Sheet.
US CL : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P ----- Y,P	Database GenBank, on STN. US National Library of Medicine (Bethesda MD), No. AB035697. Watanabe et al. "Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development'. FEBS Lett. 469 (1), 19-23, April 2000.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB041925. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development. FEBS Lett. 469 (1) 19-23, April 2000.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 13 SEPTEMBER 2000	Date of mailing of the international search report 04 OCT 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer REBECCA PROUTY Telephone No. (703) 308-0196

Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---- Y	SU, Y. et al. NIK is a New Ste20-Related Kinase That Binds NCK and MEKK1 and Activates the SAPK/JNK Cascade Via a Conserved Regulatory Domain. EMBO J. 1997, Vol. 16, No. 6, pages 1279-1290. see entire document.	1-3, 5, 7-10 -------- 4, 6, 11-16
X --- Y	YAO, Z. et al. A Novel Human STE20-Related Protein Kinase, HGK, That Specifically Activates the c-Jun N-Terminal Kinase Signaling Pathway. J. Biol. Chem. 22 January 1999, Vol. 274 No. 4, pages 2118-2125, see entire document.	1-3, 5, 7-10 ------- 4, 6, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB026289. Saito et al. "Direct Submission'. October 1999.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16
X --- Y	Database GenBank on STN. US National Library or Medicine (Bethesda MD), No. AI469033. March 1999	1-2, 7 --------- 3-6, 8-16
X --- Y	PICCIOTTO, M.R. et al. Calcium/Calmodulin-Dependent Protein Kinase I. J. Biol. Chem. 15 December 1993, Vol. 268, No. 35, pages 26512-26521. see entire document.	1-4, 7-10 ---------- 5, 6, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AA018361. NCI-CGAP, July 1996.	1-2, 7 -------- 3-6, 8-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB011123, Ohara et al. 'Direct Submission'. April 1998.	1, 2, 7 --------- 3-6, 8-16
X,P ----- Y,P	FU, C.A. et al., TNIK, A Novel Member of the Germinal Center Kinase Family That Activates the c-Jun N-Terminal Kinase Pathway and Regulates the Cytoskeleton. J. Biol. Chem. October 1999, Vol. 274, No. 43, 30729-30737, see entire document	1-3, 7-10 ---------- 4-6, 11-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7):

C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48

14

PATENT COOPERATION TREATY

PCT

REC'D 02 OCT 2001
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2923-WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US00/14696	International filing date *(day/month/year)* 26 MAY 2000	Priority date *(day/month/year)* 28 MAY 1999
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant IMMUNEX CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20 DECEMBER 2000	24 AUGUST 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer REBECCA PROUTY Telephone No. (703) 308-0196

Form PCT/IPEA/409 (cover sheet) (July 1998)*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/14696

I. Basis of the report

1. With regard to the **elements** of the international application:*

[X] the international application as originally filed

[X] the description:
pages 1-74 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the claims:
pages 75-77 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the drawings:
pages 1-6 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

[X] the sequence listing part of the description:
pages 1-19 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[X] contained in the international application in printed form.

[X] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the writen sequence listing has been furnished.

4. [X] The amendments have resulted in the cancellation of:

[X] the description, pages NONE

[X] the claims, Nos. NONE

[X] the drawings, sheets/~~fig~~ NONE

5. [ ] This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

***Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US00/14696

V. R asoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. **statement**

Novelty (N)	Claims	6, 11-16	**YES**
	Claims	1-5, 7-10	**NO**
Inventive Step (IS)	Claims	none	**YES**
	Claims	1-16	**NO**
Industrial Applicability (IA)	Claims	1-16	**YES**
	Claims	none	**NO**

2. **citations and explanations (Rule 70.7)**

Claims 1-3, 5 and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Su et al.

Su et al. teach murine NIK, nucleotide sequences, vectors and host cells encoding therefor, expression of the protein in mammalian cells and antibodies to the protein. Murine NIK is 83% identical to SEQ ID NO:8 and comprises a sequence identical to residues 149-175 of SEQ ID NO:8. The gene will hybridize to SEQ ID NO:1 under moderate stringency conditions.

Claims 1-3, 5 and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Yao et al.

Yao et al. teach human HGK, nucleotide sequences, vectors and host cells encoding therefor, expression of the protein in mammalian cells and antibodies to the protein. Human HGK is 85% identical to SEQ ID NO:8 and comprises a sequence identical to residues 149-175 of SEQ ID NO:8. The gene will hybridize to SEQ ID NO:1 under moderate stringency conditions.

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. AI469033.

GenBank Accession No. AI469033 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 87 % identical to SEQ ID NO:4. The gene will hybridize to SEQ ID NO:4 under moderate stringency conditions.

Claims 1-4, and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Piciotto et al.

Piciotto et al. teach rat calcium/calmodulin-dependent protein kinase I, nucleotide sequences, vectors and host cells encoding therefor, and expression of the protein in bacteria. Rat calcium/calmodulin-dependent protein kinase I is 78% identical to SEQ ID NO:10 and comprises a sequence 88% identical to residues 134-169 of SEQ ID NO:10. The gene will hybridize to SEQ ID NO:8 under moderate stringency conditions.

(Continued on Supplemental Sheet.)

Supplemental B x
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:
IPC(7): C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48 and US Cl.: 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. AA018361.

GenBank Accession No. AA018361 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 88 % identical to SEQ ID NO:5 The gene will hybridize to SEQ ID NO:5 under moderate stringency conditions.

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. AB011123.

GenBank Accession No. AB011123 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 100 % identical to SEQ ID NOS:6 and 7. The gene will hybridize to SEQ ID NOS:6 and 7 under moderate stringency conditions.

Claims 4, 6 and 11-16 lack an inventive step under PCT Article 33(3) as being obvious over Su et al. or Yao et al.

Su et al. and Yao et al. are discussed above. They do not teach bacterial expression of the disclosed kinases, monoclonal antibodies thereto, or assays for inhibitors or activators of the disclosed kinases. As Su et al. and Yao et al. teach that the disclosed kinases are involved in regulation of the JNK signal transduction pathway, it would have been obvious to one of ordinary skill in the art to produce large quantities of these proteins by expression in bacteria, to make monoclonal antibodies thereto, for use in identification and purification of these proteins and to screen for activators and inhibitors to these kinases as compounds which regulate the activity of the proteins would be expected to be useful for regulating the JNK signal transduction pathway.

---------- NEW CITATIONS ----------
NONE

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 December 2000 (07.12.2000)

PCT

(10) International Publication Number
WO 00/73468 A1

(51) International Patent Classification[7]: C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09, C07K 16/40, C12Q 1/48

(21) International Application Number: PCT/US00/14696

(22) International Filing Date: 26 May 2000 (26.05.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/136,781 28 May 1999 (28.05.1999) US

(71) Applicant *(for all designated States except US)*: IMMUNEX CORPORATION [US/US]; 51 University Street, Seattle, WA 98101 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: BIRD, Timothy, A. [US/US]; 10804 Olallie Drive NE, Bainbridge Island, WA 98110 (US). VIRCA, G., Duke [US/US]; 16690 SE 50th Place, Bellevue, WA 98006 (US). MARTIN, Unja [US/US]; 928 NW 64th Street, Seattle, WA 98107 (US). ANDERSON, Dirk, M. [US/US]; 3616 NW 64th Street, Seattle, WA 98107 (US).

(74) Agent: SPRUNGER, Suzanne, A.; 51 University Street, Seattle, WA 98101 (US).

(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 00/73468 A1

(54) Title: NOVEL MURINE AND HUMAN KINASES

(57) Abstract: The invention is directed to purified and isolated novel murine and human kinase polypeptides, the nucleic acids encoding such polypeptides, processes for production of recombinant forms of such polypeptides, antibodies generated against these polypeptides, fragmented peptides derived from these polypeptides, and the uses of the above.

SEQUENCE LISTING

<110> Bird, Timothy A.
Virca, George Duke
Martin, Unja
Anderson, Dirk M.

<120> NOVEL MURINE AND HUMAN KINASES

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Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly
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Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu
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Glu Ile Lys Gln Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg
65                  70                  75                  80
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Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Ser Pro Pro Gly
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Asn Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser
            100                 105                 110

Val Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Ala Leu Lys Glu Asp
        115                 120                 125

Cys Ile Ala Tyr Ile Cys Arg Glu Ile Leu Arg Gly Leu Ala His Leu
    130                 135                 140

His Ala His Lys Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu
145                 150                 155                 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala
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Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro
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Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala
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Thr Tyr Asp Tyr Arg Ser Asp Ile Trp Ser Leu Gly Ile Thr Ala Ile
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Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg
225                 230                 235                 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys
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Thr Tyr Leu
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Asn Phe Arg Ile Glu Lys Lys Ile Gly Arg Gly Gln Phe Ser Glu Val
        35                  40                  45

Tyr Arg Ala Ser Cys Leu Leu Asp Gly Val Pro Val Ala Leu Lys Lys
    50                  55                  60
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Val Gln Ile Phe Asp Leu Met Asp Ala Lys Ala Arg Ala Asp Cys Ile
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Lys Glu Ile Asp Leu Leu Lys Gln Leu Asn His Pro Asn Val Ile Lys
                85                  90                  95

Tyr Tyr Ala Ser Phe Ile Glu Asp Asn Glu Leu Asn Ile Val Leu Glu
            100                 105                 110

Leu Ala Asp Ala Gly Asp Leu Ser Arg Met Ile Lys His Phe Lys Lys
        115                 120                 125

Gln Lys Arg Leu Ile Pro Glu Arg Thr Val Trp Lys Tyr Phe Val Gln
    130                 135                 140

Leu Cys Ser Ala Leu Asp His Met His Ser Arg Arg Val Met His Arg
145                 150                 155                 160

Asp Ile Lys Pro Ala Asn Val Phe Ile Thr Ala Thr Gly Val Val Lys
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Leu Gly Asp Leu Gly Leu Gly Arg Phe Phe Ser Ser Lys Thr Thr Ala
            180                 185                 190

Ala His Ser Leu Val Gly Thr Pro Tyr Tyr Met Ser Pro Glu Arg Ile
        195                 200                 205

His Glu Asn Gly Tyr Asn Phe Lys Ser Asp Ile Trp Ser Leu Gly Cys
    210                 215                 220

Leu Leu Tyr Glu Met Ala Ala Leu Gln Ser Pro Phe Tyr Gly Asp Lys
225                 230                 235                 240

Met Asn Leu Tyr Ser Leu Cys Lys Lys Ile Glu Gln Cys Asp Tyr Pro
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Pro Leu Pro Ser Asp His Tyr Ser Glu Glu Leu Arg Gln Leu Val Asn
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Ser Ile Glu Asn Glu Ile Ala Val Leu Arg Lys Ile Lys His Glu Asn
65                  70                  75                  80

Ile Val Ala Leu Glu Asp Ile Tyr Glu Ser Pro Asn His Leu Tyr Leu
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Val Met Gln Leu Val Ser Gly Gly Glu Leu Phe Asp Arg Ile Val Glu
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Lys Gly Phe Tyr Thr Glu Lys Asp Ala Ser Thr Leu Ile Arg Gln Val
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Leu Asp Ala Val Tyr Tyr Leu His Arg Met Gly Ile Val His Arg Asp
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Ile Met Ile Ser Asp Phe Gly Leu Ser Lys Met Glu Gly Lys Gly Asp
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Val Ile Ala Tyr Ile Leu Leu Cys Gly Tyr Pro Pro Phe Tyr Asp Glu
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Asn Asp Ser Lys Leu Phe Glu Gln Ile Leu Lys Ala Glu Tyr Glu Phe
225                 230                 235                 240

Asp Ser Pro Tyr Trp Asp Asp Ile Ser Asp Ser Ala Lys Asp Phe Ile
                245                 250                 255

Arg Asn Leu Met Glu Lys Asp Pro Asn Lys Arg Tyr Thr Cys Glu Gln
            260                 265                 270

Ala Ala Arg His Pro Trp Ile Ala Gly Asp Thr Ala Leu Ser Lys Asn
        275                 280                 285

Ile His Glu Ser Val Ser Ala Gln Ile Arg Lys Asn Phe Ala Lys Ser
    290                 295                 300

Lys Trp Arg Gln Ala Phe Asn Ala Thr Ala Val Val Arg His Met Arg
305                 310                 315                 320

Arg Leu Gln Leu Gly Ser Ser Leu Asp Ser Ser Asn Ala Ser Val Ser
                325                 330                 335
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Ser Asn Leu Ser Leu Ala Ser Gln Lys Asp Cys Ala Ser Gly Thr Phe
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His Ala Leu
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<400> 11

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Ser Ala Leu Ala Ser Glu Ser Ala Arg Pro Leu Ala Asp Gly Leu Ile
             20                  25                  30

Lys Ser Pro Lys Pro Leu Met Lys Lys Gln Ala Val Lys Arg His His
         35                  40                  45

His Lys His Asn Leu Arg His Arg Tyr Glu Phe Leu Glu Thr Leu Gly
     50                  55                  60

Lys Gly Thr Tyr Gly Lys Val Lys Lys Ala Arg Glu Ser Ser Gly Arg
 65                  70                  75                  80

Leu Val Ala Ile Lys Ser Ile Arg Lys Asp Lys Ile Lys Asp Glu Gln
                 85                  90                  95

Asp Leu Leu His Ile Arg Arg Glu Ile Glu Ile Met Ser Ser Leu Asn
            100                 105                 110

His Pro His Ile Ile Ala Ile His Glu Val Phe Glu Asn Ser Ser Lys
        115                 120                 125

Ile Val Ile Val Met Glu Tyr Ala Ser Arg Gly Asp Leu Tyr Asp Tyr
    130                 135                 140

Ile Ser Glu Arg Pro Arg Leu Ser Glu Arg Asp Ala Arg His Phe Phe
145                 150                 155                 160

Arg Gln Ile Val Ser Ala Leu His Tyr Cys His Gln Asn Gly Ile Val
                165                 170                 175

His Arg Asp Leu Lys Leu Glu Asn Ile Leu Leu Asp Ala Asn Gly Asn
            180                 185                 190

Ile Lys Ile Ala Asp Phe Gly Leu Ser Asn Leu Tyr His Lys Gly Lys
        195                 200                 205

Phe Leu Gln Thr Phe Cys Gly Ser Pro Leu Tyr Ala Ser Pro Glu Ile
    210                 215                 220

Val Asn Gly Lys Pro Tyr Val Gly Pro Glu Val Asp Ser Trp Ser Leu
225                 230                 235                 240
```

```
Gly Val Leu Leu Tyr Ile Leu Val His Gly Thr Met Pro Phe Asp Gly
                245                 250                 255

Gln Asp His Lys Thr Leu Val Lys Gln Ile Ser Asn Gly Ala Tyr Arg
            260                 265                 270

Glu Pro Pro Lys Pro Ser Asp Ala Cys Gly Leu Ile Arg Trp Leu Leu
        275                 280                 285

Met Val Asn Pro Thr Arg Arg Ala Thr Leu Glu Asp Val Ala Ser His
    290                 295                 300

Trp Trp Val Asn Trp Gly Tyr Thr Thr Gly Val Gly Glu Gln Glu Ala
305                 310                 315                 320

Leu Arg Glu Gly Gly His Pro Ser Gly Asp Phe Gly Arg Ala Ser Met
                325                 330                 335

Ala Asp Trp Leu Arg Arg Ser Ser Arg Pro Leu Leu Glu Asn Gly Ala
            340                 345                 350

Lys Val Cys Ser Phe Phe Lys Gln His Val Pro Gly Gly Gly Ser Thr
        355                 360                 365

Val Pro Gly Leu Glu Arg Gln His Ser Leu Lys Lys Ser Arg Lys Glu
    370                 375                 380

Asn Asp Met Ala Gln Asn Leu Gln Gly Asp Pro Ala Glu Asp Thr Ser
385                 390                 395                 400

Ser Arg Pro Gly Lys Ser Ser Leu Lys Leu Pro Lys Gly Ile Leu Lys
                405                 410                 415

Lys Lys Ser Ser Thr Ser Ser Gly Glu Val Gln Glu Asp Pro Gln Glu
            420                 425                 430

Leu Arg Pro Val Pro Asp Thr Pro Gly Gln Pro Val Pro Ala Val Ser
        435                 440                 445

Leu Leu Pro Arg Lys Gly Ile Leu Lys Lys Ser Arg Gln Arg Glu Ser
    450                 455                 460

Gly Tyr Tyr Ser Ser Pro Glu Pro Ser Glu Ser Gly Glu Leu Leu Asp
465                 470                 475                 480

Ala Ser Asp Val Phe Val Ser Gly Asp Pro Val Glu Gln Lys Ser Pro
                485                 490                 495

Gln Ala Ser Gly Leu Leu Leu His Arg Lys Gly Ile Leu Lys Leu Asn
            500                 505                 510

Gly Lys Phe Ser Arg Thr Ala Leu Glu Gly Thr Thr Pro Ser Thr Phe
        515                 520                 525

Gly Ser Leu Asp Gln Leu Ala Ser Ser His Pro Ala Ala Arg Pro Ser
    530                 535                 540
```

```
Arg Pro Ser Gly Ala Val Ser Glu Asp Ser Ile Leu Ser Ser Glu Ser
545                 550                 555                 560

Phe Asp Gln Leu Asp Leu Pro Glu Arg Leu Pro Glu Thr Pro Leu Arg
                565                 570                 575

Gly Cys Val Ser Val Asp Asn Leu Arg Gly Leu Glu Gln Pro Pro Ser
            580                 585                 590

Glu Gly Leu Lys Arg Trp Trp Gln Glu Ser Leu Gly Asp Ser Cys Phe
        595                 600                 605

Ser Leu Thr Asp Cys Gln Glu Val Thr Ala Ala Tyr Arg Gln Ala Leu
    610                 615                 620

Gly Ile Cys Ser Lys Leu Ser
625                 630
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<212> PRT
<213> Mus musculus

<400> 12

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Met Ala Gly Pro Ser Trp Gly Leu Pro Arg Leu Asp Gly Phe Ile Leu
  1               5                  10                  15

Thr Glu Arg Leu Gly Ser Gly Thr Tyr Ala Thr Val Tyr Lys Ala Tyr
            20                  25                  30

Ala Lys Lys Asp Thr Arg Glu Val Val Ala Ile Lys Cys Val Ala Lys
        35                  40                  45

Lys Ser Leu Asn Lys Ala Ser Val Glu Asn Leu Leu Thr Glu Ile Glu
    50                  55                  60

Ile Leu Lys Gly Ile Arg His Pro His Ile Val Gln Leu Lys Asp Phe
65                  70                  75                  80

Gln Trp Asp Asn Asp Asn Ile Tyr Leu Ile Met Glu Phe Cys Ala Gly
                85                  90                  95

Gly Asp Leu Ser Arg Phe Ile His Thr Arg Arg Ile Leu Pro Glu Lys
            100                 105                 110

Val Ala Arg Val Phe Met Gln Gln Leu Ala Ser Ala Leu Gln Phe Leu
        115                 120                 125

His Glu Arg Asn Ile Ser His Leu Asp Leu Lys Pro Gln Asn Ile Leu
    130                 135                 140

Leu Ser Ser Leu Glu Lys Pro His Leu Lys Leu Ala Asp Phe Gly Phe
145                 150                 155                 160

Ala Gln His Met Ser Pro Trp Asp Glu Lys His Val Leu Arg Gly Ser
                165                 170                 175
```

```
Pro Leu Tyr Met Ala Pro Glu Met Val Cys Arg Arg Gln Tyr Asp Ala
            180                 185                 190

Arg Val Asp Leu Trp Ser Val Gly Val Ile Leu Tyr Glu Ala Leu Phe
        195                 200                 205

Gly Gln Pro Pro Phe Ala Ser Arg Ser Phe Ser Glu Leu Glu Glu Lys
    210                 215                 220

Ile Arg Ser Asn Arg Val Ile Glu Val Arg Leu Ala Gly Ser Arg His
225                 230                 235                 240

Pro Pro Gly Ile Glu Gly Leu Lys Ala Gln Lys Phe Val Gln His Cys
                245                 250                 255

Ser Ala Gly Ser Gly Arg Phe Met Ala Val Gly His Val Leu Trp Trp
            260                 265                 270

Lys Pro Arg Val Trp Ser Val Pro Glu Asp Pro Tyr Gln Pro Arg Gln
        275                 280                 285

Ala Thr Asn Asp Gln Ala Gln Ser Ser His Ser Pro Gly Leu Glu Ala
    290                 295                 300

Asn Thr His Leu Ile Gly Asp
305                 310
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<210> 13
<211> 266
<212> PRT
<213> Homo sapiens

<400> 13

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Met Ala Ser Asp Ser Pro Ala Arg Ser Leu Asp Glu Ile Asp Leu Ser
  1               5                  10                  15

Ala Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Leu Val Gly
             20                  25                  30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly
         35                  40                  45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Gly Asp Glu Glu Glu
     50                  55                  60

Glu Ile Lys Gln Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg
 65                  70                  75                  80

Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Asn Pro Pro Gly
                 85                  90                  95

Met Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser
            100                 105                 110

Val Thr Asp Leu Ile Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Glu
        115                 120                 125
```

```
Trp Ile Ala Tyr Ile Cys Arg Glu Ile Leu Arg Gly Leu Ser His Leu
    130                 135                 140

His Gln His Lys Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu
145                 150                 155                 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala
                165                 170                 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro
            180                 185                 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala
        195                 200                 205

Thr Tyr Asp Phe Lys Ser Asp Leu Trp Ser Leu Gly Ile Thr Ala Ile
    210                 215                 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg
225                 230                 235                 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Ala Pro Arg Leu Lys Ser Lys
                245                 250                 255

Lys Trp Ser Lys Lys Ile Pro Val Ile Tyr
            260                 265
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<210> 14
<211> 1360
<212> PRT
<213> Homo sapiens

<400> 14

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Met Ala Ser Asp Ser Pro Ala Arg Ser Leu Asp Glu Ile Asp Leu Ser
  1               5                  10                  15

Ala Leu Arg Asp Pro Ala Gly Ile Phe Glu Leu Val Glu Leu Val Gly
             20                  25                  30

Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly
         35                  40                  45

Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Gly Asp Glu Glu Glu
     50                  55                  60

Glu Ile Lys Gln Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg
 65                  70                  75                  80

Asn Ile Ala Thr Tyr Tyr Gly Ala Phe Ile Lys Lys Asn Pro Pro Gly
                85                  90                  95

Met Asp Asp Gln Leu Trp Leu Val Met Glu Phe Cys Gly Ala Gly Ser
            100                 105                 110

Val Thr Asp Leu Ile Lys Asn Thr Lys Gly Asn Thr Leu Lys Glu Glu
        115                 120                 125
```

```
Trp Ile Ala Tyr Ile Cys Arg Glu Ile Leu Arg Gly Leu Ser His Leu
    130                 135                 140

His Gln His Lys Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu
145                 150                 155                 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala
                165                 170                 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro
            180                 185                 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala
        195                 200                 205

Thr Tyr Asp Phe Lys Ser Asp Leu Trp Ser Leu Gly Ile Thr Ala Ile
    210                 215                 220

Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg
225                 230                 235                 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Ala Pro Arg Leu Lys Ser Lys
                245                 250                 255

Lys Trp Ser Lys Lys Phe Gln Ser Phe Ile Glu Ser Cys Leu Val Lys
            260                 265                 270

Asn His Ser Gln Arg Pro Ala Thr Glu Gln Leu Met Lys His Pro Phe
        275                 280                 285

Ile Arg Asp Gln Pro Asn Glu Arg Gln Val Arg Ile Gln Leu Lys Asp
    290                 295                 300

His Ile Asp Arg Thr Lys Lys Lys Arg Gly Glu Lys Asp Glu Thr Glu
305                 310                 315                 320

Tyr Glu Tyr Ser Gly Ser Glu Glu Glu Glu Glu Glu Asn Asp Ser Gly
                325                 330                 335

Glu Pro Ser Ser Ile Leu Asn Leu Pro Gly Glu Ser Thr Leu Arg Arg
            340                 345                 350

Asp Phe Leu Arg Leu Gln Leu Ala Asn Lys Glu Arg Ser Glu Ala Leu
        355                 360                 365

Arg Arg Gln Gln Leu Glu Gln Gln Gln Arg Glu Asn Glu Glu His Lys
    370                 375                 380

Arg Gln Leu Leu Ala Glu Arg Gln Lys Arg Ile Glu Glu Gln Lys Glu
385                 390                 395                 400

Gln Arg Arg Arg Leu Glu Glu Gln Gln Arg Arg Glu Lys Glu Leu Arg
                405                 410                 415

Lys Gln Gln Glu Arg Glu Gln Arg Arg His Tyr Glu Glu Gln Met Arg
            420                 425                 430
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Arg Glu Glu Glu Arg Arg Arg Ala Glu His Glu Gln Glu Tyr Ile Arg
435 440 445

Arg Gln Leu Glu Glu Glu Gln Arg Gln Leu Glu Ile Leu Gln Gln Gln
450 455 460

Leu Leu His Glu Gln Ala Leu Leu Leu Glu Tyr Lys Arg Lys Gln Leu
465 470 475 480

Glu Glu Gln Arg Gln Ala Glu Arg Leu Gln Arg Gln Leu Lys Gln Glu
485 490 495

Arg Asp Tyr Leu Val Ser Leu Gln His Gln Arg Gln Glu Gln Arg Pro
500 505 510

Val Glu Lys Lys Pro Leu Tyr His Tyr Lys Glu Gly Met Ser Pro Ser
515 520 525

Glu Lys Pro Ala Trp Ala Lys Glu Val Glu Glu Arg Ser Arg Leu Asn
530 535 540

Arg Gln Ser Ser Pro Ala Met Pro His Lys Val Ala Asn Arg Ile Ser
545 550 555 560

Asp Pro Asn Leu Pro Pro Arg Ser Glu Ser Phe Ser Ile Ser Gly Val
565 570 575

Gln Pro Ala Arg Thr Pro Pro Met Leu Arg Pro Val Asp Pro Gln Ile
580 585 590

Pro His Leu Val Ala Val Lys Ser Gln Gly Pro Ala Leu Thr Ala Ser
595 600 605

Gln Ser Val His Glu Gln Pro Thr Lys Gly Leu Ser Gly Phe Gln Glu
610 615 620

Ala Leu Asn Val Thr Ser His Arg Val Glu Met Pro Arg Gln Asn Ser
625 630 635 640

Asp Pro Thr Ser Glu Asn Pro Pro Leu Pro Thr Arg Ile Glu Lys Phe
645 650 655

Asp Arg Ser Ser Trp Leu Arg Gln Glu Glu Asp Ile Pro Pro Lys Val
660 665 670

Pro Gln Arg Thr Thr Ser Ile Ser Pro Ala Leu Ala Arg Lys Asn Ser
675 680 685

Pro Gly Asn Gly Ser Ala Leu Gly Pro Arg Leu Gly Ser Gln Pro Ile
690 695 700

Arg Ala Ser Asn Pro Asp Leu Arg Arg Thr Glu Pro Ile Leu Glu Ser
705 710 715 720

Pro Leu Gln Arg Thr Ser Ser Gly Ser Ser Ser Ser Ser Ser Thr Pro
725 730 735

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Ser Ser Gln Pro Ser Ser Gln Gly Gly Ser Gln Pro Gly Ser Gln Ala
            740                 745                 750

Gly Ser Ser Glu Arg Thr Arg Val Arg Ala Asn Ser Lys Ser Glu Gly
        755                 760                 765

Ser Pro Val Leu Pro His Glu Pro Ala Lys Val Lys Pro Glu Glu Ser
    770                 775                 780

Arg Asp Ile Thr Arg Pro Ser Arg Pro Ala Ser Tyr Lys Lys Ala Ile
785                 790                 795                 800

Asp Glu Asp Leu Thr Ala Leu Ala Lys Glu Leu Arg Glu Leu Arg Ile
                805                 810                 815

Glu Glu Thr Asn Arg Pro Met Lys Lys Val Thr Asp Tyr Ser Ser Ser
            820                 825                 830

Ser Glu Glu Ser Glu Ser Ser Glu Glu Glu Glu Glu Asp Gly Glu Ser
        835                 840                 845

Glu Thr His Asp Gly Thr Val Ala Val Ser Asp Ile Pro Arg Leu Ile
    850                 855                 860

Pro Thr Gly Ala Pro Gly Ser Asn Glu Gln Tyr Asn Val Gly Met Val
865                 870                 875                 880

Gly Thr His Gly Leu Glu Thr Ser His Ala Asp Ser Phe Ser Gly Ser
                885                 890                 895

Ile Ser Arg Glu Gly Thr Leu Met Ile Arg Glu Thr Ser Gly Glu Lys
            900                 905                 910

Lys Arg Ser Gly His Ser Asp Ser Asn Gly Phe Ala Gly His Ile Asn
        915                 920                 925

Leu Pro Asp Leu Val Gln Gln Ser His Ser Pro Ala Gly Thr Pro Thr
    930                 935                 940

Glu Gly Leu Gly Arg Val Ser Thr His Ser Gln Glu Met Asp Ser Gly
945                 950                 955                 960

Thr Glu Tyr Gly Met Gly Ser Ser Thr Lys Ala Ser Phe Thr Pro Phe
                965                 970                 975

Val Asp Pro Arg Val Tyr Gln Thr Ser Pro Thr Asp Glu Asp Glu Glu
            980                 985                 990

Asp Glu Glu Ser Ser Ala Ala Ala Leu Phe Thr Ser Glu Leu Leu Arg
        995                1000                1005

Gln Glu Gln Ala Lys Leu Asn Glu Ala Arg Lys Ile Ser Val Val Asn
   1010                1015                1020

Val Asn Pro Thr Asn Ile Arg Pro His Ser Asp Thr Pro Glu Ile Arg
1025                1030                1035                1040
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Lys Tyr Lys Lys Arg Phe Asn Ser Glu Ile Leu Cys Ala Ala Leu Trp
                1045                1050                1055

Gly Val Asn Leu Leu Val Gly Thr Glu Asn Gly Leu Met Leu Leu Asp
            1060                1065                1070

Arg Ser Gly Gln Gly Lys Val Tyr Asn Leu Ile Asn Arg Arg Arg Phe
        1075                1080                1085

Gln Gln Met Asp Val Leu Glu Gly Leu Asn Val Leu Val Thr Ile Ser
    1090                1095                1100

Gly Lys Lys Asn Lys Leu Arg Val Tyr Tyr Leu Ser Trp Leu Arg Asn
1105                1110                1115                1120

Arg Ile Leu His Asn Asp Pro Glu Val Glu Lys Lys Gln Gly Trp Ile
                1125                1130                1135

Thr Val Gly Asp Leu Glu Gly Cys Ile His Tyr Lys Val Val Lys Tyr
            1140                1145                1150

Glu Arg Ile Lys Phe Leu Val Ile Ala Leu Lys Asn Ala Val Glu Ile
        1155                1160                1165

Tyr Ala Trp Ala Pro Lys Pro Tyr His Lys Phe Met Ala Phe Lys Ser
    1170                1175                1180

Phe Ala Asp Leu Gln His Lys Pro Leu Leu Val Asp Leu Thr Val Glu
1185                1190                1195                1200

Glu Gly Gln Arg Leu Lys Val Ile Phe Gly Ser His Thr Gly Phe His
                1205                1210                1215

Val Ile Asp Val Asp Ser Gly Asn Ser Tyr Asp Ile Tyr Ile Pro Ser
            1220                1225                1230

His Ile Gln Gly Asn Ile Thr Pro His Ala Ile Val Ile Leu Pro Lys
        1235                1240                1245

Thr Asp Gly Met Glu Met Leu Val Cys Tyr Glu Asp Glu Gly Val Tyr
    1250                1255                1260

Val Asn Thr Tyr Gly Arg Ile Thr Lys Asp Val Val Leu Gln Trp Gly
1265                1270                1275                1280

Glu Met Pro Thr Ser Val Ala Tyr Ile His Ser Asn Gln Ile Met Gly
                1285                1290                1295

Trp Gly Glu Lys Ala Ile Glu Ile Arg Ser Val Glu Thr Gly His Leu
            1300                1305                1310

Asp Gly Val Phe Met His Lys Arg Ala Gln Arg Leu Lys Phe Leu Cys
        1315                1320                1325

Glu Arg Asn Asp Lys Val Phe Phe Ala Ser Val Arg Ser Gly Gly Ser
    1330                1335                1340
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Ser Gln Val Phe Phe Met Thr Leu Asn Arg Asn Ser Met Met Asn Trp
1345 1350 1355 1360

<210> 15
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide primer

<400> 15
atggcgagcg actccccggc tcgaa 25

<210> 16
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:oligonucleotide primer

<400> 16
ccagttcatc atggaatttc tgttgaggg 29

1

3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :Please See Extra Sheet.
US CL : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P ----- Y,P	Database GenBank, on STN. US National Library of Medicine (Bethesda MD), No. AB035697. Watanabe et al. ''Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development'. FEBS Lett. 469 (1), 19-23, April 2000.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB041925. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development. FEBS Lett. 469 (1) 19-23, April 2000.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 13 SEPTEMBER 2000	Date of mailing of the international search report 04 OCT 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile N . (703) 305-3230	Authorized officer REBECCA PROUTY Telephone No. (703) 308-0196

Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---- Y	SU, Y. et al. NIK is a New Ste20-Related Kinase That Binds NCK and MEKK1 and Activates the SAPK/JNK Cascade Via a Conserved Regulatory Domain. EMBO J. 1997, Vol. 16, No. 6, pages 1279-1290. see entire document.	1-3, 5, 7-10 -------- 4, 6, 11-16
X --- Y	YAO, Z. et al. A Novel Human STE20-Related Protein Kinase, HGK, That Specifically Activates the c-Jun N-Terminal Kinase Signaling Pathway. J. Biol. Chem. 22 January 1999, Vol. 274 No. 4, pages 2118-2125, see entire document.	1-3, 5, 7-10 ------- 4, 6, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB026289. Saito et al. "Direct Submission'. October 1999.	1-3, 7, 10 ---------- 4-6, 8-9, 11-16
X --- Y	Database GenBank on STN. US National Library or Medicine (Bethesda MD), No. AI469033. March 1999	1-2, 7 --------- 3-6, 8-16
X --- Y	PICCIOTTO, M.R. et al. Calcium/Calmodulin-Dependent Protein Kinase I. J. Biol. Chem. 15 December 1993, Vol. 268, No. 35, pages 26512-26521. see entire document.	1-4, 7-10 ---------- 5, 6, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AA018361. NCI-CGAP, July 1996.	1-2, 7 -------- 3-6, 8-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB011123, Ohara et al. 'Direct Submission'. April 1998.	1, 2, 7 --------- 3-6, 8-16
X,P ----- Y,P	FU, C.A. et al., TNIK, A Novel Member of the Germinal Center Kinase Family That Activates the c-Jun N-Terminal Kinase Pathway and Regulates the Cytoskeleton. J. Biol. Chem. October 1999, Vol. 274, No. 43, 30729-30737, see entire document	1-3, 7-10 ---------- 4-6, 11-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7):

C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48